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Arinobu

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(54) **ICON ARRANGEMENT DRAWING CREATION SYSTEM**

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G06F 3/12	(2006.01)
G06K 1/00	(2006.01)
H04N 1/32	(2006.01)
G06F 3/0481	(2013.01)
G06Q 10/06	(2012.01)

(52) **U.S. Cl.**

CPC ***H04N 1/32101*** (2013.01); ***G06F 3/04817*** (2013.01); ***G06F 3/12*** (2013.01); ***G06Q 10/0631*** (2013.01); *H04N 2201/0094* (2013.01)

(58) **Field of Classification Search**

CPC .. G06F 3/1296; G06F 3/1297; G06F 3/1293; G06F 3/04817; G06F 3/12; H04N 1/00204; H04N 1/32101; H04N 2201/0094; G06K 15/00

USPC 358/1.1, 1.15, 1.13, 1.14

See application file for complete search history.

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(57) **ABSTRACT**

An arrangement drawing creation system includes: a portable apparatus carried by an arrangement drawing creator; and a server. The portable apparatus includes: a first communication processing portion communicates with the server and a target apparatus; an acquisition processing portion acquires a device ID from the target apparatus; a generation processing portion generates a device icon; a display processing portion displays the generated device icon and a layout drawing; an operation input processing portion accepts an instruction of moving a position of the device icon; and a registration processing portion registers the changed position of the device icon in the server. The server includes: a second communication processing portion communicates with the portable apparatus; and a storage portion stores the layout drawing and the arrangement drawing.

6 Claims, 9 Drawing Sheets

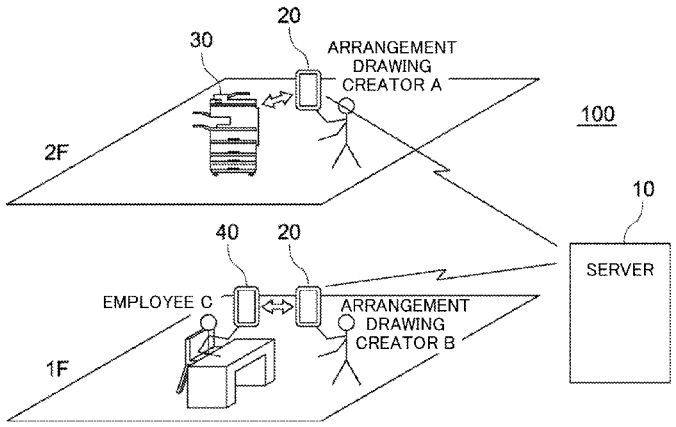


FIG. 1

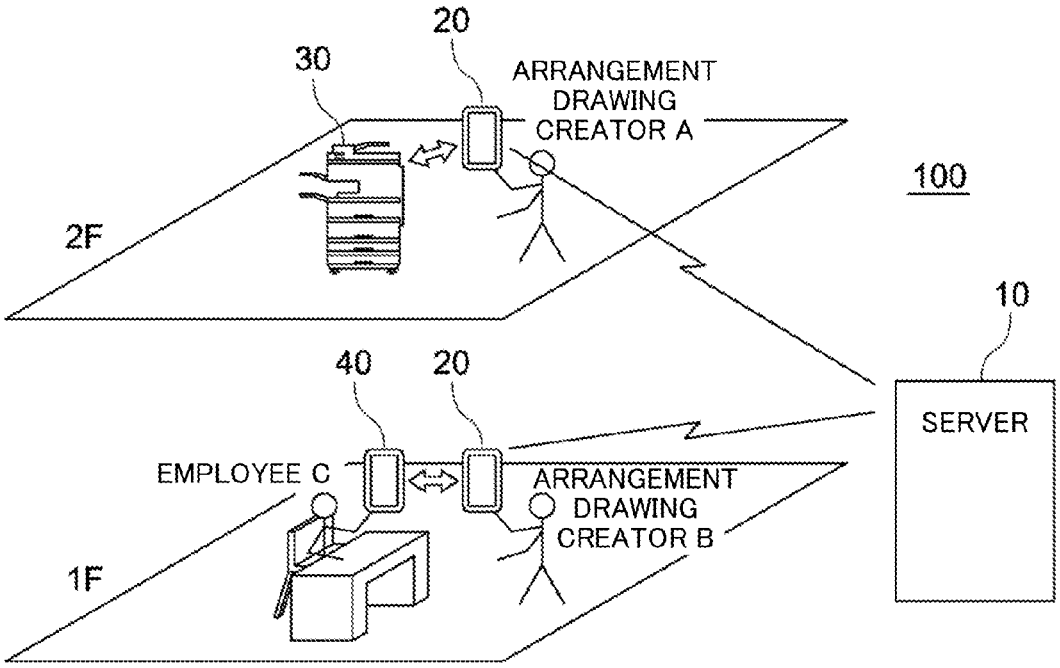
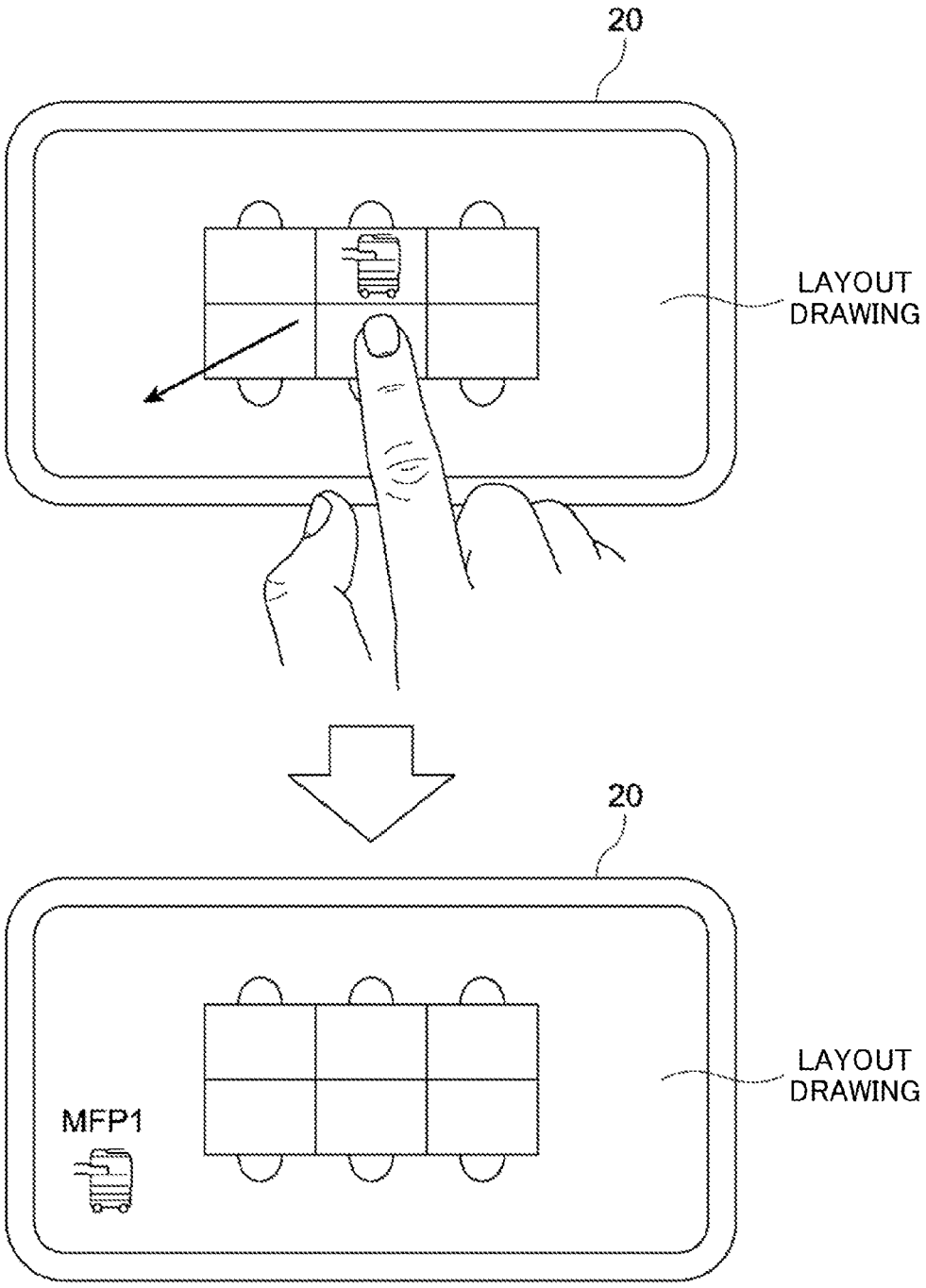

20
30
ARRANGEMENT DRAWING CREATOR A
100
2F
10
40
20
SERVER
EMPLOYEE C
ARRANGEMENT DRAWING CREATOR B
1F

FIG. 2



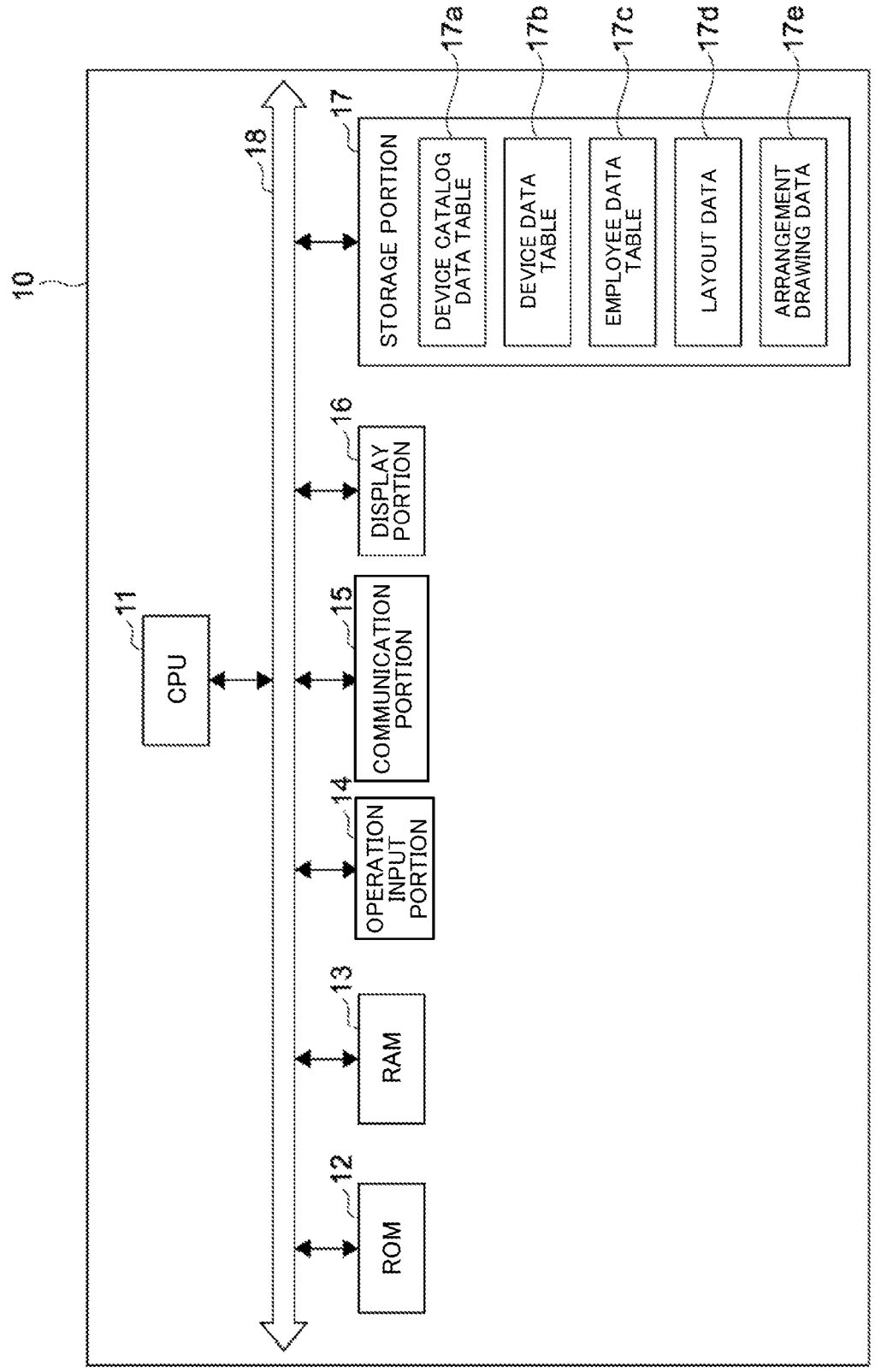
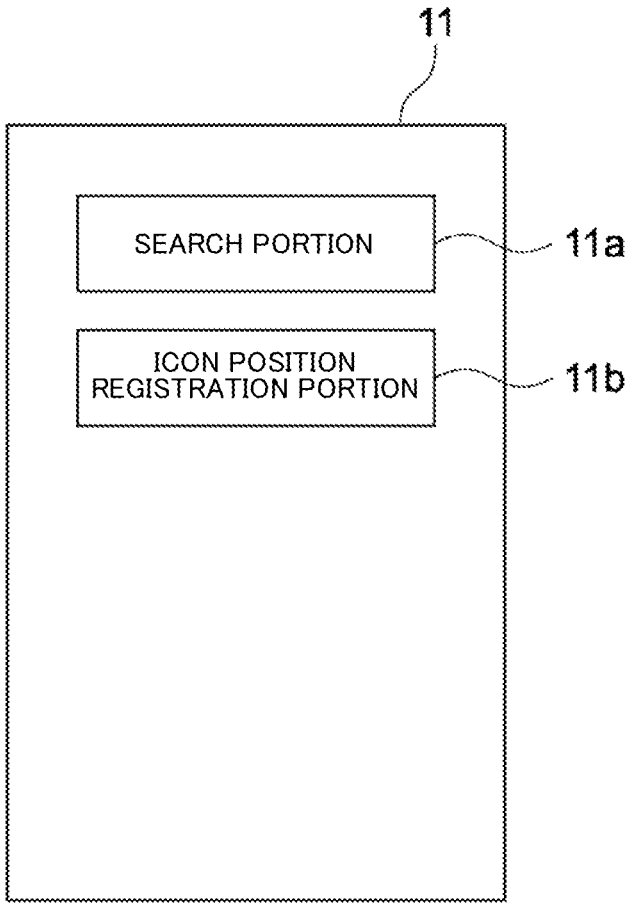

10
18
17
STORAGE PORTION
17a
DEVICE CATALOG DATA TABLE
17b
DEVICE DATA TABLE
17c
EMPLOYEE DATA TABLE
17d
LAYOUT DATA
17e
ARRANGEMENT DRAWING DATA
16
DISPLAY PORTION
11
CPU
15
COMMUNICATION PORTION
14
OPERATION INPUT PORTION
13
RAM
12
ROM

FIG. 3

FIG. 4


11
SEARCH PORTION
11a
ICON POSITION REGISTRATION PORTION
11b

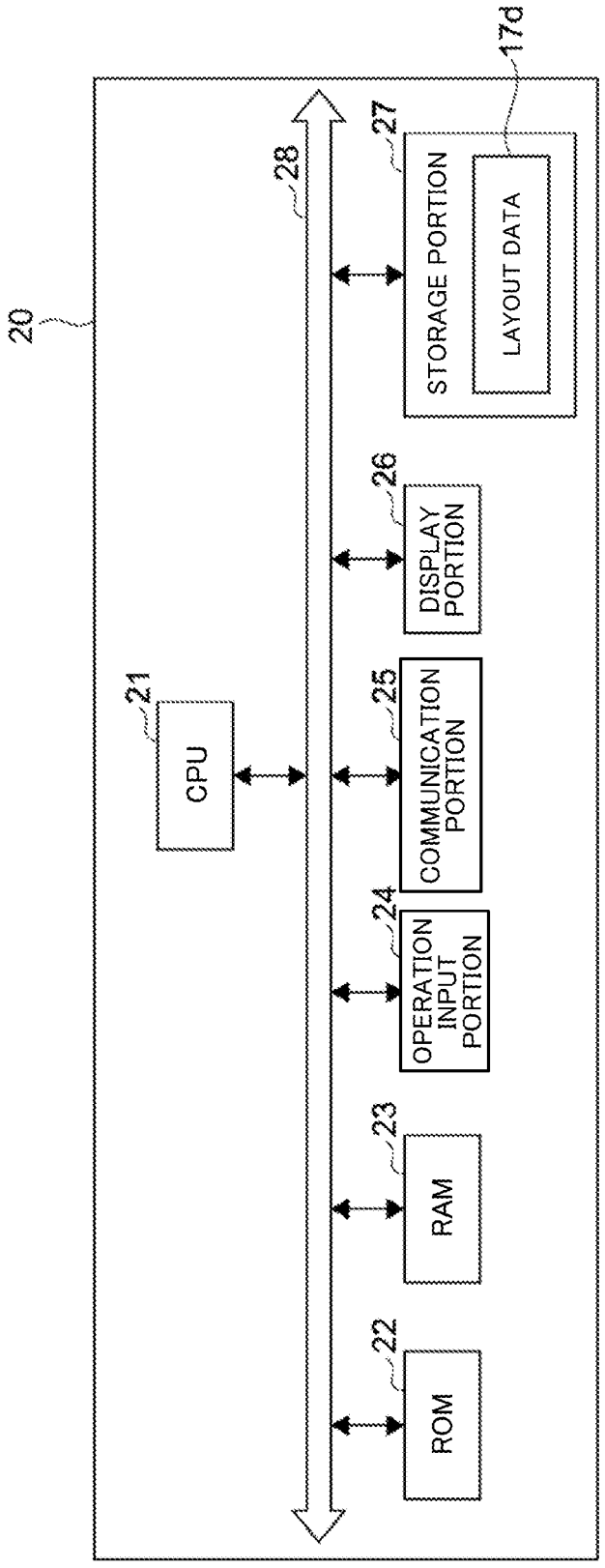
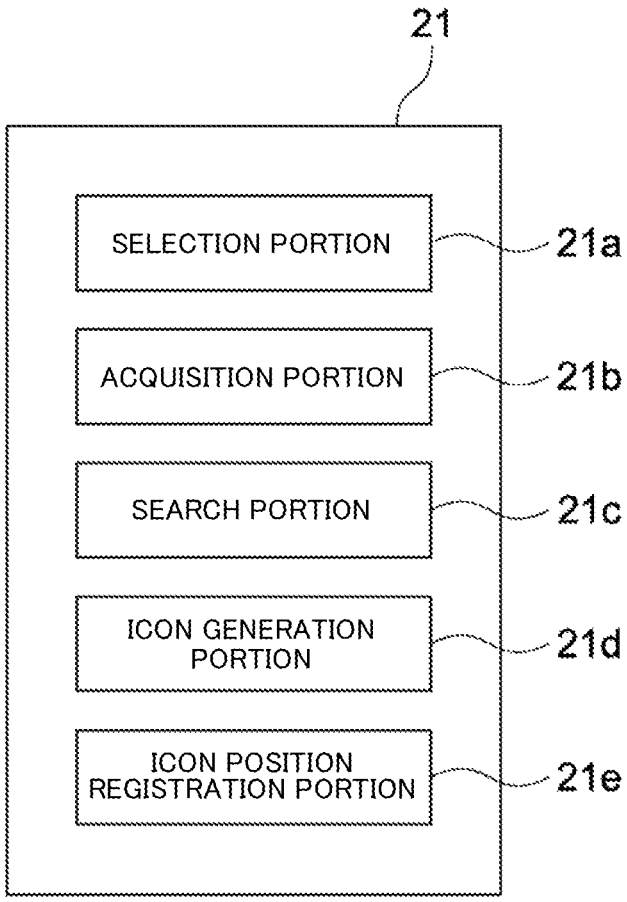

20
28
27
17d
STORAGE PORTION
LAYOUT DATA
26
DISPLAY PORTION
21
CPU
25
COMMUNICATION PORTION
24
OPERATION INPUT PORTION
23
RAM
22
ROM

FIG. 5

FIG. 6


21
SELECTION PORTION
21a
ACQUISITION PORTION
21b
SEARCH PORTION
21c
ICON GENERATION PORTION
21d
ICON POSITION REGISTRATION PORTION
21e

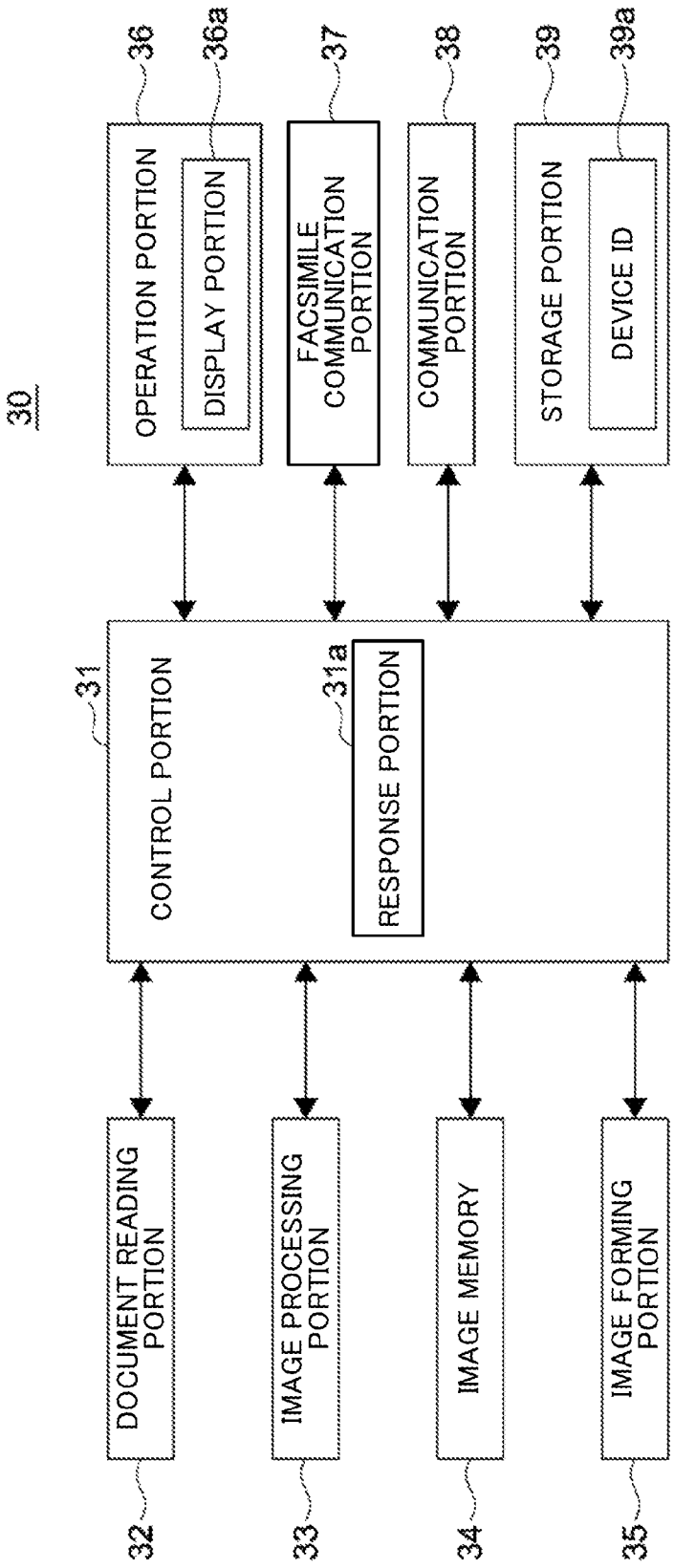

30
OPERATION PORTION
DISPLAY PORTION
FACSIMILE COMMUNICATION PORTION
COMMUNICATION PORTION
STORAGE PORTION
DEVICE ID
CONTROL PORTION
RESPONSE PORTION
DOCUMENT READING PORTION
IMAGE PROCESSING PORTION
IMAGE MEMORY
IMAGE FORMING PORTION
36
36a
37
38
39
39a
31
31a
32
33
34
35

FIG. 7

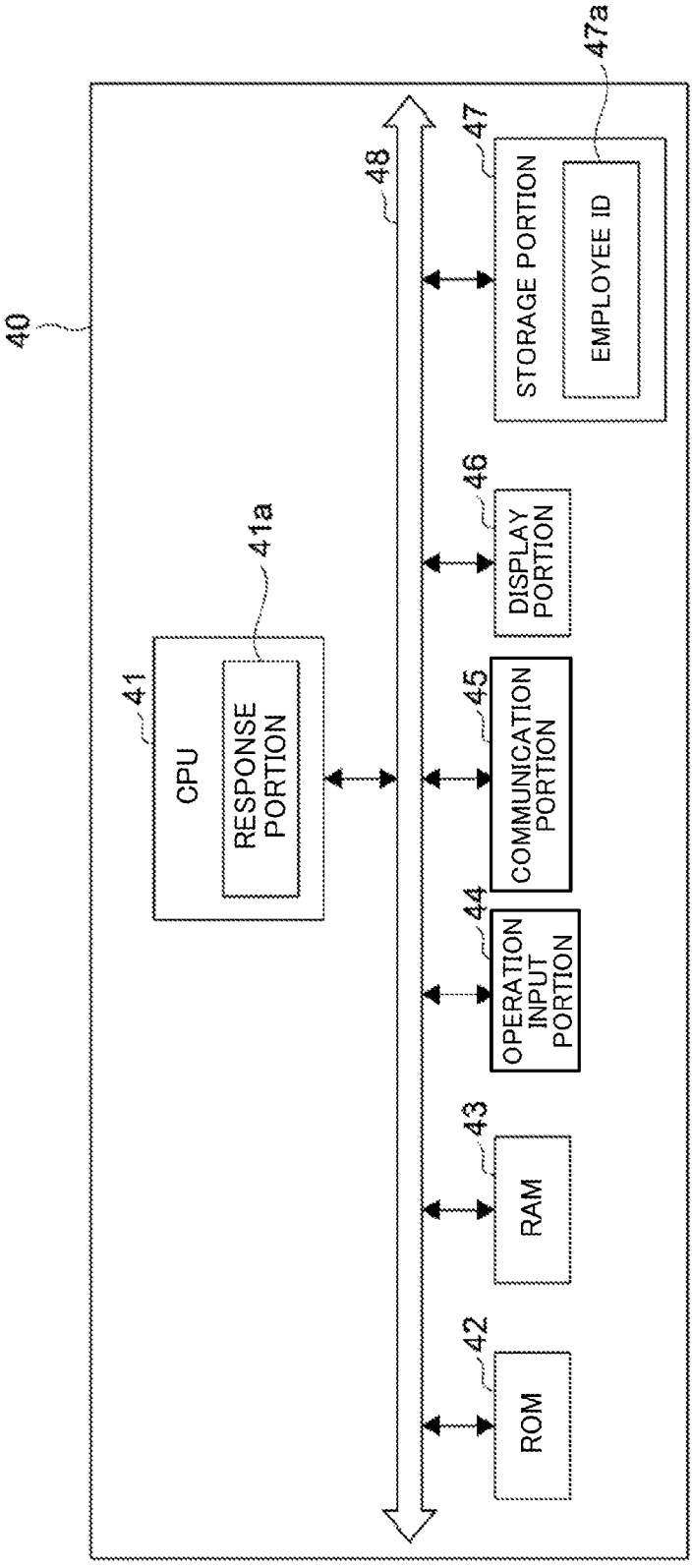
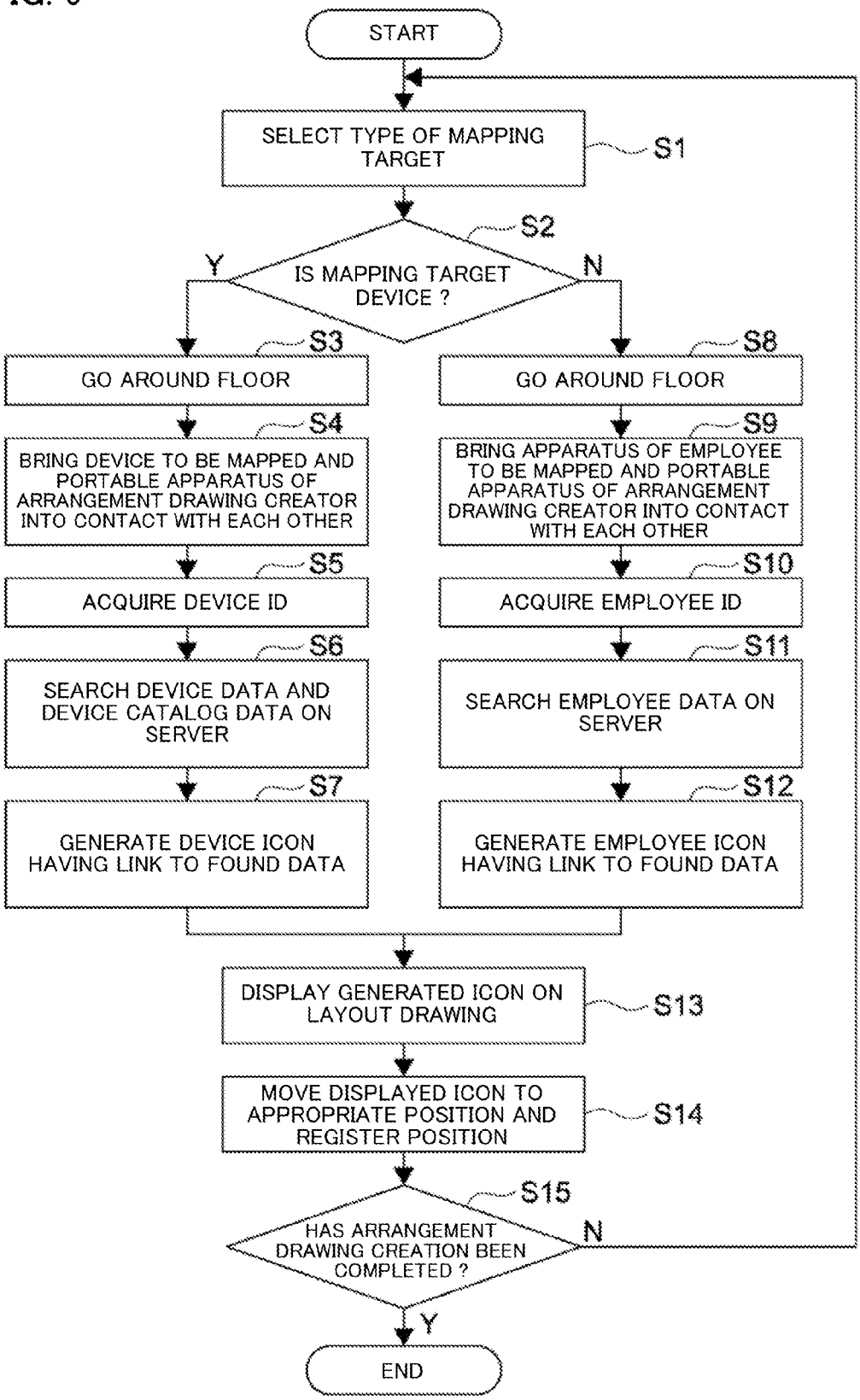

40
48
47
47a
STORAGE PORTION
EMPLOYEE ID
46
DISPLAY PORTION
41a
41
CPU
RESPONSE PORTION
45
COMMUNICATION PORTION
44
OPERATION INPUT PORTION
43
RAM
42
ROM

FIG. 8

FIG. 9


START
SELECT TYPE OF MAPPING TARGET
S1
S2
IS MAPPING TARGET DEVICE ?
Y
N
S3
GO AROUND FLOOR
S4
BRING DEVICE TO BE MAPPED AND PORTABLE APPARATUS OF ARRANGEMENT DRAWING CREATOR INTO CONTACT WITH EACH OTHER
S5
ACQUIRE DEVICE ID
S6
SEARCH DEVICE DATA AND DEVICE CATALOG DATA ON SERVER
S7
GENERATE DEVICE ICON HAVING LINK TO FOUND DATA
S8
GO AROUND FLOOR
S9
BRING APPARATUS OF EMPLOYEE TO BE MAPPED AND PORTABLE APPARATUS OF ARRANGEMENT DRAWING CREATOR INTO CONTACT WITH EACH OTHER
S10
ACQUIRE EMPLOYEE ID
S11
SEARCH EMPLOYEE DATA ON SERVER
S12
GENERATE EMPLOYEE ICON HAVING LINK TO FOUND DATA
DISPLAY GENERATED ICON ON LAYOUT DRAWING
S13
MOVE DISPLAYED ICON TO APPROPRIATE POSITION AND REGISTER POSITION
S14
S15
HAS ARRANGEMENT DRAWING CREATION BEEN COMPLETED ?
N
Y
END

ICON ARRANGEMENT DRAWING CREATION SYSTEM

INCORPORATION BY REFERENCE

This application is based upon and claims the benefit of priority from the corresponding Japanese Patent Application No. 2014-200129 filed on Sep. 30, 2014, the entire contents of which are incorporated herein by reference.

BACKGROUND

The present disclosure relates to an arrangement drawing creation system, an arrangement drawing creation apparatus, and a non-transitory computer-readable storage medium having an arrangement drawing creation program stored therein, which create an arrangement drawing of an apparatus and the like disposed on a floor of an office or the like.

When a manager manages apparatuses such as many multifunction peripherals (MFPs) and personal computers (PCs) introduced on a floor in an office or the like, it is important for the manager to recognize arrangement locations of the apparatuses on the floor.

In the case of a large scale in which the number of apparatuses is several hundreds or more, in order to appropriately recognize the position of each apparatus, a manager has created an arrangement drawing of the apparatuses and the like to recognize the arrangement locations of each apparatus and the like. Various modifications for easily creating such an arrangement drawing have been made.

In a typical technique, apparatus objects representing apparatuses such as a printer are displayed on a layout drawing of a floor and are connected to each other by connection objects (lines) based on data of connection between the apparatus objects. To a printer object, information indicating by which PC the printer is designated as a default printer is added.

In the above typical technique, a state of the printer is displayed by changing a display form of the displayed printer object. In addition, a position, on the layout drawing, at which the printer object or the like is disposed, is adjusted by a user performing a drag operation or the like with respect to the printer object on a client PC.

SUMMARY

An arrangement drawing creation system according to an aspect of the present disclosure includes a portable apparatus carried by an arrangement drawing creator and a server capable of communicating with the portable apparatus by wireless.

The portable apparatus includes a first communication processing portion, an acquisition processing portion, an icon generation processing portion, a display processing portion, an operation input processing portion, and a first icon position registration processing portion. The first communication processing portion performs a communication process with the server and a target apparatus whose installation position is to be described in a specific area on an arrangement drawing. The acquisition processing portion performs a process of acquiring, from the target apparatus via the first communication processing portion, a device ID with which the target apparatus is uniquely identified. The icon generation processing portion performs a process of generating a device icon having the acquired device ID. The display processing portion performs a process of displaying the generated device icon such that the device icon is superimposed on a layout drawing of an already-existing object, the layout drawing being acquired from the server. The operation input processing portion performs a process of accepting, from the arrangement drawing creator, an instruction of moving a position of the device icon on the displayed layout drawing. The first icon position registration processing portion performs a process of changing the position of the device icon on the layout drawing based on the accepted instruction, and performs a process of issuing an instruction of registering the changed position of the device icon in the server.

The server includes a second communication processing portion, a storage portion, and a second icon position registration processing portion. The second communication processing portion performs a communication process with the portable apparatus. The storage portion has a storage area for storing the layout drawing and the arrangement drawing. The second icon position registration processing portion performs a process of registering the changed position of the device icon in the arrangement drawing, based on the instruction from the first icon position registration processing portion of the portable apparatus.

An arrangement drawing creation apparatus according to an aspect of the present disclosure is an arrangement drawing creation apparatus carried by an arrangement drawing creator. The arrangement drawing creation apparatus includes a communication processing portion, a storage portion, an acquisition processing portion, an icon generation processing portion, a display processing portion, an operation input processing portion, and an icon position registration processing portion. The communication processing portion performs a communication process with a target apparatus whose installation position is to be described in a specific area on an arrangement drawing. The storage portion has a storage area for storing a layout drawing of an already-existing object and the arrangement drawing. The acquisition processing portion performs a process of acquiring, from the target apparatus via the communication processing portion, a device ID with which the target apparatus is uniquely identified. The icon generation processing portion performs a process of generating a device icon having the acquired device ID. The display processing portion performs a process of displaying the generated device icon such that the device icon is superimposed on the layout drawing. The operation input processing portion performs a process of accepting, from the arrangement drawing creator, an instruction of moving a position of the device icon on the displayed layout drawing. The icon position registration processing portion performs a process of changing the position of the device icon on the layout drawing based on the accepted instruction, and performs a process of registering the changed position of the device icon in the arrangement drawing.

A non-transitory computer-readable storage medium according to another aspect of the present disclosure has stored therein an arrangement drawing creation program executable by a computer of a portable apparatus carried by an arrangement drawing creator. The arrangement drawing creation program causes the computer to execute: a procedure of acquiring, from a target apparatus whose installation position is to be described in a specific area on an arrangement drawing, via a first communication processing portion, a device ID with which the target apparatus is uniquely identified; a procedure of generating a device icon having the acquired device ID; a procedure of displaying the generated device icon such that the device icon is superimposed on a layout drawing of an already-existing object; a

procedure of accepting, from the arrangement drawing creator, an instruction of moving a position of the device icon on the displayed layout drawing; and a procedure of performing a process of changing the position of the device icon on the layout drawing, based on the accepted instruction, and issuing an instruction of registering the changed position of the device icon in a server.

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description with reference where appropriate to the accompanying drawings. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter. Furthermore, the claimed subject matter is not limited to implementations that solve any or all disadvantages noted in any part of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows an outline and the overall configuration of an arrangement drawing creation system **100** according to an embodiment of the present disclosure.

FIG. **2** shows the outline of the arrangement drawing creation system **100** according to the embodiment of the present disclosure.

FIG. **3** shows the configuration of a server **10** as a computer.

FIG. **4** shows functional blocks realized by a program being executed in a CPU **11**.

FIG. **5** shows the configuration of a portable apparatus **20** as a tablet type computer.

FIG. **6** shows functional blocks realized by a program being executed in a CPU **21**.

FIG. **7** shows the configuration of an image forming apparatus **30**.

FIG. **8** is a configuration diagram of an apparatus **40**.

FIG. **9** shows steps of a process in the arrangement drawing creation system **100** according to the embodiment of the present disclosure.

DETAILED DESCRIPTION

Hereinafter, an embodiment of the present disclosure will be described with reference to the drawings.

[Outline and Overall Configuration]

First, an outline and the overall configuration of an arrangement drawing creation system according to an embodiment of the present disclosure will be described. FIGS. **1** and **2** show the outline and the overall configuration of the arrangement drawing creation system according to the embodiment of the present disclosure.

The arrangement drawing creation system **100** includes a server **10**, portable apparatuses **20** used by arrangement drawing creators to create an arrangement drawing which is created by registering positions of apparatuses and employees on a layout drawing, an image forming apparatus **30** which resisters positions on the layout drawing, and an apparatus **40** of each employee whose position is registered on the layout drawing. Communication between the server **10** and each portable apparatus **20** is performed by wireless.

The state shown in FIG. **1** shows that an arrangement drawing creator A who carries the portable apparatus **20** goes around the second floor of an office and puts the portable apparatus **20** over the image forming apparatus **30** placed on the second floor to acquire a device ID of the image forming apparatus **30** via near field communication (NFC).

FIG. **1** also shows that an arrangement drawing creator B who carries another portable apparatus **20** goes around the first floor of the office and puts the portable apparatus **20** over the apparatus **40** of an employee C whose seat is on the first floor, to acquire an employee ID stored in the apparatus **40** via NFC.

Based on the acquired device ID or employee ID, each portable apparatus **20** searches for attribute data of the image forming apparatus **30** or the employee who carries the apparatus **40** which attribute data is stored in the server **10**, and generates a device icon or employee icon having link information to the found attribute data.

The generated icon is displayed on a layout drawing on the portable apparatus **20**. The upper diagram in FIG. **2** is a diagram showing a state where the device icon is displayed on a screen of the portable apparatus **20**.

As shown in the lower diagram in FIG. **2**, the arrangement drawing creator A drags the device icon, which is displayed on the layout drawing and represents the image forming apparatus **30**, to a position corresponding to the actual installation location, then causes the server **10** to register this position, and creates an arrangement drawing.

In the lower diagram in FIG. **2**, the device ID for identifying the apparatus corresponding to the device icon is displayed near the device icon. Instead of the device ID, a name with which a user of the arrangement drawing easily identifies the apparatus may be displayed near the device icon.

Conventionally, in order to create an arrangement drawing, an arrangement drawing creator has to perform a field research of a floor regarding arrangement of apparatuses and the like to recognize a current arrangement situation, then return to the location of a client PC, and create arrangement data according to the acquired arrangement situation. In this case, a load on the arrangement drawing creator is great. Such a problem is solved by the arrangement drawing creation system **100** according to the present embodiment.

That is, according to the above-described arrangement drawing creation system **100**, the arrangement drawing creator can create an accurate arrangement drawing without taking time and effort, by going around each floor with the portable apparatus **20**, acquiring an ID of an apparatus such as the image forming apparatus **30** installed thereon or an ID of an employee seated on a seat thereon, generating a corresponding icon, and moving the position of the icon on a layout drawing while viewing the actual location of the apparatus or the employee.

Each of the device icon and the employee icon has link information to attribute data stored in the server **10**. Thus, by selecting a specific icon, a user of the arrangement drawing can refer to the attribute data, within the server **10**, which is linked to the icon.

In the description here, a diagram in which only the shape of each floor indicating a specific area and arrangement of equipment already installed on each floor (already-existing objects) are represented is referred to as a layout drawing, and a diagram in which a device icon or an employee icon is disposed on a layout drawing is referred to as an arrangement drawing, so that these diagrams are distinguished from each other.

In the above description, NFC is used in order to acquire the device ID, but the communication is not limited thereto, and wired communication such as via a universal serial bus (USB) or another type of wireless communication may be

used. A bar code indicating the device ID may be attached to the image forming apparatus **30** or the like beforehand, and may be read by a scanner provided in the portable apparatus **20**.

In order to acquire the device ID of the image forming apparatus **30** or the like, the portable apparatus **20** may acquire information within a management information base (MIB) provided in the image forming apparatus **30** or the like, by a simple network management protocol (SNMP). In this configuration, the portable apparatus **20** can acquire the device ID of the image forming apparatus **30** or the like without adding a special mechanism to the image forming apparatus **30** or the like.

In the above description, in order to acquire the employee ID, NFC is performed between the apparatus **40** carried by the employee and the portable apparatus **20**, but the communication is not limited thereto. An ID card carried by the employee may be a non-contact type IC card, and the employee ID may be read from the ID card by using a reader provided in the portable apparatus **20**.

In the above description, the arrangement drawing creation system **100** includes the server **10** and the one or more portable apparatuses **20**, but the configuration of the arrangement drawing creation system **100** is not limited thereto, and the server **10** and the portable apparatus **20** may be integrated with each other into a single portable apparatus **20'** which forms an arrangement drawing creation apparatus.

In the above, the outline and the overall configuration of the arrangement drawing creation system according to the embodiment of the present disclosure have been described.

[Configuration of Server **10**]

Next, the configuration of the server **10** will be described. The server **10** may be configured by dedicated hardware or software or may be configured by a computer. The configuration of the server **10** in the case where the server **10** is configured by a computer is shown in FIG. **3**.

As shown in FIG. **3**, the server **10** includes a central processing unit (CPU) **11**, a read only memory (ROM) **12**, a random access memory (RAM) **13**, an operation input portion **14**, a communication portion **15**, a display portion **16**, and a storage portion **17**, and these respective blocks are connected to each other via a bus **18**.

The ROM **12** stores data and a plurality of programs such as firmware for executing various processes. The RAM **13** is used as a working area for the CPU **11** and temporarily stores an operating system (OS), currently executed various applications, and currently processed various data.

The storage portion **17** is, for example, a hard disk drive (HDD), a flash memory, or another non-volatile memory. In the storage portion **17**, in addition to the OS, various applications, and various data, a device catalog data table **17***a*, a device data table **17***b*, an employee data table **17***c*, layout data **17***d*, and arrangement drawing data **17***e*, which will be described later, are stored.

The device catalog data table **17***a* is a table in which data regarding specifications of an apparatus such as the image forming apparatus **30** which is developed on the floor of the office is stored so as to be linked to a device ID.

The device data table **17***b* is a table in which unique attribute data other than the specifications, of the apparatus such as the image forming apparatus **30** which is developed on the floor of the office, for example, a current state of the apparatus, is stored so as to be linked to the device ID.

The employee data table **17***c* is a table in which an attribute of an employee whose seat is fixed in the office is stored so as to be linked to an employee ID.

The layout data **17***d* is electronic data for displaying the layout drawing of the office on the screen of the portable apparatus **20**.

The arrangement drawing data **17***e* is data in which the positions of a device icon and an employee icon disposed on the layout drawing are stored.

The communication portion **15** is a communication circuit which performs a communication process of communicating information between the portable apparatus **20** and the communication portion **15**.

The CPU **11** develops, into the RAM **13**, a program corresponding to a command provided from the operation input portion **14**, among a plurality of programs stored in the ROM **12** and the storage portion **17**, and controls the display portion **16** and the storage portion **17** as appropriate based on the developed program.

The operation input portion **14** is, for example, a pointing device such as a mouse, a keyboard, a touch panel, or another operation device.

The display portion **16** includes a display control circuit, and is, for example, a liquid crystal display, an electroluminescence (EL) display, a plasma display, a cathode ray tube (CRT) display, or the like. The display portion **16** may be included in the server **10** or may be externally connected thereto.

Next, functional blocks realized by a program being executed in the CPU **11** will be described. FIG. **4** shows the functional blocks realized by the program being executed in the CPU **11**.

The functional blocks realized in the CPU **11** of the server **10** are a search portion **11***a* and an icon position registration portion **11***b*. The search portion **11***a* and the icon position registration portion **11***b* may be realized by an electric circuit or an arithmetic unit having an electronic device incorporated therein such that a process of each portion is executable.

The search portion **11***a* performs a process of searching the device catalog data table **17***a*, the device data table **17***b*, or the employee data table **17***c* based on the device ID or employee ID acquired by the portable apparatus **20** of the arrangement drawing creator, and transmits a result of the search to the portable apparatus **20** via the communication portion **15**.

The icon position registration portion **11***b* performs a process of acquiring information of the position of the device icon or the employee icon determined on the layout drawing by the arrangement drawing creator using the portable apparatus **20**, and stores the acquired position information as the arrangement drawing data **17***e* into the storage portion **17**.

[Configuration of Portable Apparatus **20**]

Next, the configuration of the portable apparatus **20** will be described. Similarly to the server **10**, the portable apparatus **20** may be configured by dedicated hardware or software or may be configured by a computer, in particular, a tablet type computer which is suitable to be carried. The configuration of the portable apparatus **20** in the case where the portable apparatus **20** is configured by a tablet type computer is shown in FIG. **5**.

As shown in FIG. **5**, the configuration of the portable apparatus **20** is substantially the same as the configuration of the server **10**, the portable apparatus **20** includes a CPU **21**, a ROM **22**, a RAM **23**, an operation input portion **24**, a communication portion **25**, a display portion **26**, and a storage portion **27**, and they are connected to each other via a bus **28**. The description of the parts common to the server **10** is omitted.

In the storage portion **27**, a copy of the layout data **17***d*, which is stored in the storage portion **17** of the server **10**, may be stored. Because of this configuration, as compared to the configuration where the layout data **17***d* is acquired from the server **10** in order to display the layout drawing, a time of communication for acquiring data can be reduced, or an amount of communication can be reduced.

Next, functional blocks realized by a program being executed in the CPU **21** will be described. FIG. **6** shows the functional blocks realized by the program being executed in the CPU **21**.

The functional blocks realized in the CPU **21** of the portable apparatus **20** are a selection portion **21***a*, an acquisition portion **21***b*, a search portion **21***c*, an icon generation portion **21***d*, and an icon position registration portion **21***e*. The selection portion **21***a*, the acquisition portion **21***b*, the search portion **21***c*, the icon generation portion **21***d*, and the icon position registration portion **21***e* may be realized by an electric circuit or an arithmetic unit having an electronic device incorporated therein such that a process of each portion is executable.

The selection portion **21***a* performs a process of selecting a device icon generation process or an employee icon generation process based on an instruction which is inputted from the operation input portion **24** by the arrangement drawing creator.

In the case of the device icon generation process, the acquisition portion **21***b* performs a process of performing communication with the image forming apparatus **30** or the like to acquire the device ID from the image forming apparatus **30** or the like. In the case of the employee icon generation process, the acquisition portion **21***b* performs a process of performing communication or the like with the apparatus **40** carried by the employee or the like, to acquire the employee ID.

The search portion **21***c* performs a process of searching for attribute information of the device (device data, device catalog data) or attribute information of the employee which is stored in the server **10**, by using the device ID or employee ID acquired by the acquisition portion **21***b*.

The icon generation portion **21***d* performs a process of generating a device icon or an employee icon having a link to the attribute information, on the server **10**, which is found by the search portion **21***c*.

The icon position registration portion **21***e* performs a process of recognizing a position determined by the arrangement drawing creator moving the device icon or employee icon which is generated and displayed on the screen of the portable apparatus **20**, on the layout drawing, and registering the recognized position in the server **10**.

[Configuration of Image Forming Apparatus **30**]

Next, the configuration of the image forming apparatus **30** will be described. FIG. **7** shows the configuration of the image forming apparatus **30**. Here, among the multiple methods for transferring the device ID from the image forming apparatus **30** to the portable apparatus **20** as described above, the configuration in the case where the image forming apparatus **30** communicates with the portable apparatus **20** to transfer the device ID thereto, will be described.

The image forming apparatus **30** includes a control portion **31**. The control portion **31** is a processor including a CPU, a RAM, a ROM, a dedicated hardware circuit, and the like and controls entire operation of the image forming apparatus **30**.

The control portion **31** is connected to a document reading portion **32**, an image processing portion **33**, an image memory **34**, an image forming portion **35**, an operation portion **36**, a facsimile communication portion **37**, a communication portion **38**, a storage portion **39**, and the like. The control portion **31** controls operation of each of the above portions connected thereto, and performs a process of transmitting and receiving signals or data to and from each portion.

The control portion **31** controls a process and drive of a mechanism required for executing operation control for each function such as a scanner function, a print function, a copy function, and a facsimile transmission/reception function based on a job execution instruction inputted from the user through the operation portion **36** or a PC or the like which is connected via a network.

In addition, the control portion **31** includes a response portion **31***a*. The response portion **31***a* is a functional block realized by a program, loaded from the ROM or the like into the RAM, being executed by the CPU.

The response portion **31***a* performs a process of responding to an acquisition request for the device ID of the image forming apparatus **30**, which acquisition request is received from the portable apparatus **20** via the communication portion **38**, with the device ID. The response portion **31***a* may be realized by an electric circuit or an arithmetic unit having an electronic device incorporated therein such that the process in the response portion **31***a* is executable.

The document reading portion **32** includes a control circuit, a reading mechanism, and the like and performs a process of reading an image from a document.

The image processing portion **33** is an image processing circuit which performs image processing as necessary on image data of the image read by the document reading portion **32**. For example, after the image read by the document reading portion **32** is formed, the image processing portion **33** performs image processing such as shading compensation in order to improve the quality of the image.

The image memory **34** has an area for temporarily storing data of a document image obtained through reading by the document reading portion **32**, and temporarily storing data to be printed by the image forming portion **35**.

The image forming portion **35** is a printer which includes a control circuit, an image forming mechanism, and the like and performs a process of forming an image such as image data read by the document reading portion **32**.

The operation portion **36** includes a touch panel portion and an operation key portion which accept instructions from the user for various operations and processes which are executable by the image forming apparatus **30**. The touch panel portion includes a display portion **36***a* such as a liquid crystal display (LCD) provided with a touch panel.

The facsimile communication portion **37** is a communication circuit which includes an encoding/decoding portion, a modulation/demodulation portion, and a network control unit (NCU) and performs facsimile transmission by using a public telephone line network.

The communication portion **38** is a communication circuit which performs transmission and reception of various data to and from an apparatus (a PC, etc.) within a local area and performs transmission and reception of data to and from the portable apparatus **20** and the like by using NFC.

The storage portion **39** has a storage area for storing a document image read by the document reading portion **32**, and the like and storing a device ID **39***a* of the image forming apparatus **30**. The storage portion **39** is a large-capacity storage unit such as an HDD.

[Configuration of Apparatus **40**]

Next, the configuration of the apparatus **40** which is carried by the employee and which responds with the employee ID of the employee carrying the apparatus **40** when there is a request from the portable apparatus **20**, will be described. FIG. **8** shows the configuration of the apparatus **40**. Here, among the multiple methods for acquiring the employee ID by the portable apparatus **20** as described above, the configuration in the case where the apparatus **40** carried by the employee communicates with the portable apparatus **20** to transfer the employee ID thereto, will be described.

The apparatus **40** has substantially the same configuration as that of the server **10** or the portable apparatus **20** and includes a CPU **41**, a ROM **42**, a RAM **43**, an operation input portion **44**, a communication portion **45**, a display portion **46**, and a storage portion **47**, and they are connected to each other via a bus **48**. The apparatus **40** may be any apparatus as long as it is an apparatus that can respond with the employee ID. Here, the configuration in the case of using a computer will be described. Here, only the parts different from the server **10** and the portable apparatus **20** will be described, and the description of the part common to the server **10** and the portable apparatus **20** is omitted.

A response portion **41***a* is realized by a program executed in the CPU **41**. The response portion **41***a* performs a process of responding to an acquisition request for the employee ID of the employee carrying the apparatus **40**, which acquisition request is received from the portable apparatus **20** via the communication portion **45**, with an employee ID **47***a* stored in the storage portion **47**. The response portion **41***a* may be realized by an electric circuit or an arithmetic unit having an electronic device incorporated therein such that the process in the response portion **41***a* is executable.

[Flow of Process]

Next, flow of a process in the arrangement drawing creation system **100** according to the embodiment of the present disclosure will be described. A flowchart of FIG. **9** shows steps of the process in the arrangement drawing creation system **100** according to the embodiment of the present disclosure.

First, the selection portion **21***a* of the portable apparatus **20** accepts, from the arrangement drawing creator via the operation input portion **24**, an instruction as to whether to perform an operation of disposing (mapping) a device icon of an apparatus such as the image forming apparatus **30** on an arrangement drawing or perform an operation of disposing an employee icon indicating the position of the seat of an employee (step S**1**).

Next, the selection portion **21***a* determines whether the accepted instruction is to map a device icon or an employee icon (step S**2**).

If the accepted instruction is to map a device icon (Y in step S**2**), a process of mapping a device icon is performed in the arrangement drawing creation system **100**.

The arrangement drawing creator goes around a floor, for which an arrangement drawing is to be created, with the portable apparatus **20** (step S**3**).

When the arrangement drawing creator encounters the image forming apparatus **30** or the like to be mapped, the arrangement drawing creator puts the portable apparatus **20** over or on the image forming apparatus **30** or the like to cause NFC to be performed (step S**4**).

Next, the acquisition portion **21***b* of the portable apparatus **20** acquires, from the image forming apparatus **30** or the like, the device ID **39***a* of the apparatus (step S**5**).

Next, the search portion **21***c* of the portable apparatus **20** cooperates with the search portion **11***a* of the server **10** to search the device catalog data table **17***a* and the device data table **17***b* stored in the storage portion **17** of the server **10**, by using the device ID **39***a* acquired in the previous step (step S**6**).

Next, the icon generation portion **21***d* generates a device icon having link information to device catalog data and device data found in the previous step (step S**7**).

Next, the icon position registration portion **21***e* displays the device icon generated in the previous step, at a temporary position on the screen of the display portion **26** of the portable apparatus **20** such that the device icon is superimposed on a layout drawing (step S**13**).

Next, the arrangement drawing creator moves the position of the device icon displayed on the screen to an appropriate position on the layout drawing by a drag operation or the like. The icon position registration portion **21***e* recognizes the position of the device icon determined by the arrangement drawing creator, and cooperates with the icon position registration portion **11***b* on the server **10** to store position information of the recognized position as the arrangement drawing data **17***e* into the storage portion **17** of the server **10** (step S**14**).

Next, the CPU **11** determines whether the arrangement drawing creation process has been completed, based on an input or the like from the arrangement drawing creator (step S**15**).

If the arrangement drawing creation has not been completed (N in step S**15**), the CPU **11** returns to step S**1** to repeat the process.

If the arrangement drawing creation has been completed (Y in step S**15**), the CPU **11** ends the process.

If the instruction accepted in step S**2** is to map an employee icon (N in step S**2**), a process of mapping an employee icon is performed in the arrangement drawing creation system **100**.

The arrangement drawing creator goes around the floor, for which an arrangement drawing is to be created, with the portable apparatus **20** (step S**8**).

When the arrangement drawing creator encounters an employee to be mapped, the arrangement drawing creator puts the portable apparatus **20** over or on the apparatus **40** carried by the employee, to cause NFC to be performed (step S**9**).

Next, the acquisition portion **21***b* of the portable apparatus **20** acquires, from the apparatus **40**, the employee ID **47***a* of the employee carrying the apparatus **40** (step S**10**).

Next, the search portion **21***c* of the portable apparatus **20** cooperates with the search portion **11***a* of the server **10** to search the employee data table **17***c* stored in the storage portion **17** of the server **10**, by using the employee ID **47***a* acquired in the previous step (step S**11**).

Next, the icon generation portion **21***d* generates an employee icon having link information to employee data found in the previous step (step S**12**).

Processes after the employee icon is generated are the same as those when the device icon is generated, and thus the description thereof is omitted.

It is to be understood that the embodiments herein are illustrative and not restrictive, since the scope of the disclosure is defined by the appended claims rather than by the description preceding them, and all changes that fall within metes and bounds of the claims, or equivalence of such metes and bounds thereof are therefore intended to be embraced by the claims.

The invention claimed is:

1. An arrangement drawing creation system comprising: a portable apparatus carried by an arrangement drawing creator; and a server capable of communicating with the portable apparatus by wireless, wherein

the portable apparatus includes:

a first communication processing portion performs a communication process with the server and a target apparatus whose installation position is to be described in a specific area on an arrangement drawing;

an acquisition processing portion performs a process of acquiring, from the target apparatus via the first communication processing portion, a device ID with which the target apparatus is uniquely identified;

an icon generation processing portion performs a process of generating a device icon having the acquired device ID;

a display processing portion performs a process of displaying the generated device icon such that the device icon is superimposed on a layout drawing of an already-existing object, the layout drawing being acquired from the server;

an operation input processing portion performs a process of accepting, from the arrangement drawing creator, an instruction of moving a position of the device icon on the displayed layout drawing; and

a first icon position registration processing portion performs a process of changing the position of the device icon on the layout drawing based on the accepted instruction, and performs a process of issuing an instruction of registering the changed position of the device icon in the server, and

the server includes:

a second communication processing portion performs a communication process with the portable apparatus;

a storage portion having a storage area for storing the layout drawing and the arrangement drawing; and

a second icon position registration processing portion performs a process of registering the changed position of the device icon in the arrangement drawing, based on the instruction from the first icon position registration processing portion of the portable apparatus.

2. The arrangement drawing creation system according to claim 1, wherein

the storage portion of the server further has attribute data of the target apparatus stored therein,

the portable apparatus further includes a first search processing portion performs a process of issuing an instruction of searching for the attribute data by using the acquired device ID,

the server further includes a second search processing portion configured to search for the attribute data based on the instruction from the first search processing portion of the portable apparatus and return a search result to the first search processing portion, and

the icon generation processing portion of the portable apparatus generates the device icon having link information to the found attribute data based on the search result.

3. The arrangement drawing creation system according to claim 1, wherein the first communication processing portion acquires the device ID from the target apparatus via near field communication.

4. The arrangement drawing creation system according to claim 1, wherein

the portable apparatus is carried by the arrangement drawing creator in order to create an arrangement drawing in which a seat position of an employee is described in the specific area,

the first communication processing portion is capable of communicating with an apparatus possessed by the employee,

the acquisition processing portion acquires, from the apparatus possessed by the employee via the first communication processing portion, an employee ID with which the employee is uniquely identified,

the icon generation processing portion generates an employee icon having the acquired employee ID,

the display processing portion displays the generated employee icon such that the employee icon is superimposed on the layout drawing acquired from the server,

the operation input processing portion accepts, from the arrangement drawing creator, an instruction of moving a position of the employee icon on the displayed layout drawing,

the first icon position registration processing portion changes the position of the employee icon on the layout drawing based on the accepted instruction, and issues an instruction of registering the changed position of the employee icon in the server, and

the second icon position registration processing portion of the server registers the changed position of the employee icon in the arrangement drawing based on the instruction from the first icon position registration processing portion of the portable apparatus.

5. An arrangement drawing creation apparatus carried by an arrangement drawing creator, the arrangement drawing creation apparatus comprising:

a communication processing portion performs a communication process with a target apparatus whose installation position is to be described in a specific area on an arrangement drawing;

a storage portion having a storage area for storing a layout drawing of an already-existing object and the arrangement drawing;

an acquisition processing portion performs a process of acquiring, from the target apparatus via the communication processing portion, a device ID with which the target apparatus is uniquely identified;

an icon generation processing portion performs a process of generating a device icon having the acquired device ID;

a display processing portion performs a process of displaying the generated device icon such that the device icon is superimposed on the layout drawing;

an operation input processing portion performs a process of accepting, from the arrangement drawing creator, an instruction of moving a position of the device icon on the displayed layout drawing; and

an icon position registration processing portion performs a process of changing the position of the device icon on the layout drawing based on the accepted instruction, and performs a process of registering the changed position of the device icon in the arrangement drawing.

6. A non-transitory computer-readable storage medium having stored therein an arrangement drawing creation program executable by a computer of a portable apparatus carried by an arrangement drawing creator, the arrangement drawing creation program causing the computer to execute:

a procedure of acquiring, from a target apparatus whose installation position is to be described in a specific area

on an arrangement drawing, via a first communication processing portion, a device ID with which the target apparatus is uniquely identified;

a procedure of generating a device icon having the acquired device ID;

a procedure of displaying the generated device icon such that the device icon is superimposed on a layout drawing of an already-existing object;

a procedure of accepting, from the arrangement drawing creator, an instruction of moving a position of the device icon on the displayed layout drawing; and

a procedure of performing a process of changing the position of the device icon on the layout drawing, based on the accepted instruction, and issuing an instruction of registering the changed position of the device icon in a server.

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